

## NSLS OHSAS Job Risk Assessment

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<b>Name(s) of Risk Team Members:</b> B. Chmiel, A. Lanzirotti, C. Nelson	<b>Point Value → Parameter ↓</b>	1	2	3	4	5
<b>Job Title:</b> <span style="color: blue;">General Cryogenic Work</span>  <b>Job Number or Job Identifier:</b> <span style="color: blue;">LS-JRA-0010</span>	<b>Frequency (B)</b>	≤once/year	≤once/month	≤once/week	≤once/shift	>once/shift
<b>Job Description:</b> General work with non-combustible cryogenic fluids and systems. Does <b>not</b> include liquid hydrogen or liquid oxygen.	<b>Severity (C)</b>	First Aid Only	Medical Treatment	Lost Time	Partial Disability	Death or Permanent Disability
Training and Procedure List (Optional):	<b>Likelihood (D)</b>	Extremely Unlikely <<1x/20yrs	Unlikely 1x/10-20yrs	Possible >1x/10-20yrs	Probable 1x/yr	Multiple >1x/yr
Approved by: W. R. Casey    Date: 06/15/06 Rev. #: 2 <a href="#">Revision Log</a>						
<b>Stressors (if applicable, please list all):</b> Moving dewars outdoors		<b>Reason for Revision (if applicable):</b>			<b>Comments:</b>	

Job Step / Task	Hazard	Before Controls						Initial Controls	After Initial Controls					Control(s) Added to Reduce Risk	After Additional Controls					
		Stressors Y/N	# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD		# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD		# of People A	Frequency B	Severity C	Likelihood D	Risk* AxBxCxD	% Risk Reduction
Moving storage vessel (dewar) to/from location	Overexertion injuries-excessive lifting, pushing, pulling, holding or carrying	N	1	3	3	3	27	Wheeled dewar design, Use of carts	1	3	3	2	18							
		Y	1	2	3	4	24		1	2	3	3	18							
	Being struck by an object due to pressure release	N	1	3	4	2	24	Vessel design/certification, equipment inspection, deflector on relief valve	1	3	3	2	18							

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Moving storage vessel (dewar) to/from location	Being struck by object (Dewar tipping over)	N	1	3	3	3	27	Design of dewar, attention to speed, threshold design	1	3	3	2	18							
Transferring liquid nitrogen to storage dewar at fill station.	Contact with temperature extremes (Frost bite)	N	1	4	2	4	32	Thick gloves (cryo, leather, welding, etc.), face shield, training. Proper clothing = cuff-less pants and sleeves and no sandals.	1	4	1	2	8							
	Oxygen deficiency	N	1	4	5	3	60	ODH alarms (including fill valve shutdown, auto door open and Control Room alarm response), postings, training	1	4	1	2	8							
	Being struck by an object due to pressure release	N	1	3	3	3	27	Training, eye protection, equipment inspection, vessel design/certification	1	3	3	2	18							
Connecting, transferring and disconnecting storage dewar to/from experimental equipment	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Thick gloves (cryo, leather, welding, etc.), eye protection, training; Proper clothing = cuff-less pants and sleeves and no sandals.	1	3	1	2	6							
	Being struck by an object due to pressure release	N	1	3	3	3	27	Training, eye protection, equipment inspection, vessel design/certification	1	3	3	2	18							

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	Falls to lower level from ladder or other cryostat access	N	1	3	4	3	36	Ladder/platform design, equipment inspection, training, Tier I	1	3	4	2	24							
Hand transfer of cryogenic fluid to system	Contact with temperature extremes (Frost bite)	N	1	4	3	4	48	Heavy Gloves, eye protection, Proper clothing = cuff-less pants and sleeves and no sandals, training.	1	4	2	2	16							
	Falls to lower level from ladder or other cryostat access	N	1	3	4	3	36	Ladder/platform design, equipment inspection, training, Tier I	1	3	4	2	24							
	Cut by sharp object i.e. glass thermos dewars	N	1	3	2	3	18	Thick gloves (cryo, leather, welding, etc.), training	1	3	2	2	12							
Moving helium dewars using cranes, elevators, or other lifting devices	Oxygen deficiency	N	1	1	5	3	15	Training (No personnel allowed to ride with dewar in elevator)	1	1	5	2	10							
	Overexertion injuries-excessive lifting, pushing, pulling, holding or carrying	N	1	1	3	3	9	Wheeled dewar design	1	1	2	3	6							
	Being struck by an object due to pressure release	N	1	1	3	3	9	Training, eye protection, equipment inspection, vessel design/certification	1	1	2	2	4							

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	Being struck by object dropped during lift	N	1	1	4	3	12	Training, certification, hard hat, inspection of lifting devices	1	1	4	2	8							
Work in close proximity to cryogenic auto fill system	Oxygen deficiency	N	1	3	5	1	15	Training, ventilation, ODH calculations	1	3	5	1	15							
	Contact with temperature extremes Frost bite	N	1	3	2	3	18	Training, Blosa.	1	3	2	2	12							
Manipulating samples in liquid nitrogen bath Example: protein samples in plastic vials held on aluminum canes	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Training, safety glasses, gloves - inner cotton and outer rubber layers Do not immerse gloved fingers in cryogen; use tongs for this purpose	1	3	2	3	18							
Mounting and manipulating samples within cryostream	Contact with temperature extremes (Frost bite)	N	1	3	3	3	27	Training, safety glasses	1	3	2	3	18							

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Further Description of Controls Added to Reduce Risk:																						
*Risk:	0 to 20 Negligible	21 to 40 Acceptable						41 to 60 Moderate					61 to 80 Substantial					81 or greater Intolerable				